

OPTIMIZING THE INTERNET TO ENHANCE TEACHERS' PROFESSIONAL DEVELOPMENT OF VOCATIONAL SECONDARY SCHOOL

Istanto Wahju Djatmiko

Department of Electrical Engineering Education
Faculty of Engineering, Yogyakarta State University
istanto_wj@uny.ac.id or istanto_wj@yahoo.com

Abstract

This paper is written in order to contribute an ideas regarding to the importance of the Internet as a part of professional development of vocational school teachers. Teachers have a strategic role on empowering and learning in schools. Nowadays in Indonesia, teachers as a profession, consequently they should be aware to improve performance, competency, maintain and also their professionalism. On the other hand, rapidly information technology development allows the Internet can be used as an alternative medium for teachers' professional development. Varied information can be retrieved openly and quickly via internet. But the question is, how can teachers convert information from internet into useful knowledge to: their self development, produce scientific papers, and to work innovatively. Those are a product of teacher professional development. To be effective information into knowledge, knowledge management is required to vocational secondary teachers, which can be briefly stated as "learning to know what we know". This paper will describe knowledge management approach as a strategy to optimize the information from the Internet into useful knowledge for teachers' professional development of vocational secondary schools.

Keywords: teachers' professional development, vocational secondary school, internet.

1. Introduction

Nowadays, all nations in the world are faced to globalization era characterized rapidly changes in science and technology. According to [1], in early 21st century has grown information age or usually called the digital age that will gradually shift into knowledge age. At this knowledge age, knowledge is main resource in any economic activities. Shifting in digital and knowledge age should be anticipated by the world of education, especially vocational education, which oriented to prepare learners to be able to work in accordance with job market demands

In the information age, lifelong learning and collaboration are essential aspects of most innovative work that will generate many knowledge workers (k-workers). Information technology is not only transforming our workplace but also on educational system. Refer to [2], in the information era, there are three main components of the collaborative work

environment in the ICT-oriented workplace, i.e. digital works, digital workplaces, and digital workforce. Intersection among those of components is needed that called computer-supported co-operative work (CSCW). CSCW addresses how collaborative activities and people coordination can be supported by means of computer systems.

Computer systems which drive a lot of information also have potentially to help students and teachers to learn much of what they need to improve their knowledge. In particular, computer-based systems on the Internet can be designed to capture knowledge as it is generated within a community of practice and to deliver relevant knowledge when it has beneficial. Data of [5] showed that in July, 2013, Indonesia ranked 8th of the world internet users with penetration of internet usage 19.0% of the total Indonesian population, and 1.7% compared to penetration of the world internet users. These data indicated that education in Indonesia has vastly

opportunities to use the Internet as a knowledge repository.

In the context of education system in Indonesia, there are two terms associated with the world work-oriented education, i.e. vocational education in secondary education level such as *Sekolah Menengah Kejuruan* (vocational secondary school) and vocational education in higher education level such as diplomas and polytechnics. Meanwhile, traditionally according to [4] main objective of vocational education was to prepare students to work using competency-based education approach. Be different to [5] that education for the world of work should prepare workers to meet the new needs of industry in the information age that will requires different knowledge and skills of people and creates shifts in the nature of employment. It means vocational education will have endeavored to better prepare people in the new era by facilitating ICT infrastructures as new models in supporting learning process. These concepts can be argued that vocational education is organized for special education students to be ready to work in a productive and professional and able to plan to develop their career in a particular expertise area. Vocational education is an education that is always dynamic and adaptive to the growth of the labor market and the development of science and technology.

Above descriptions can be understood that the Internet as a knowledge repository has very beneficial in learning process at classroom. Teacher should have triggered their curiosity to explore further uses of the Internet as a learning tool through using the Internet itself. The most exciting feature of the Internet is how it easily it can be used as a communicative device, because those of important for a teacher's and student's life and it is a powerful tool to enhance teaching and learning. Here are teachers will have very strategic role in effort to convert and transfer information from the Internet into knowledge sources that have beneficial to themselves and their students in learning. This means that teachers are required continuously to develop their professionalism to be able to maintain and improve their professional competences. Therefore, teachers must have basic

knowledge management capabilities to optimize information into useful knowledge for their career development and professional interests.

2. Internet as a Knowledge Repository

There are two important terms that should be understood in this section, i.e. knowledge and internet. Before discussing about knowledge, it would be better understand to distinguish between data, information, and knowledge. Refer to [6] data typically represent symbols or facts out of context, and thus not directly nor immediately meaningful. Data placed within some interpretive context acquire meaning and value as information. Knowledge is the meaningfully structured accumulation of information.

In general, internet means of interconnecting among computer to any other computer anywhere in the world via dedicated routers and servers. When two computers are connected over the Internet, they can send, receive, and retrieve all kinds of information, such as text, pictures, graphics, voice, video, and computer programs. Refer to [7] the Internet is a "*network of networks*" that a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to link millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless, and optical networking technologies.

In the internet world, any kind of information can easily be searched and found what it's needed. Just type the keyword in search engine and you can find a lot of information about it.

The Internet is recognized as a rich information source, which can be easily tapped by any person who has skills to use the Internet. The rapid development of Information and Communication Technology has yielded an almost unlimited variety of databases and multimedia platforms that are able to supply multifarious needs, including knowledge, edutainment, entertainment, leisure

activities, consumer facilities, interpersonal interaction, etc.

There are many knowledge centers in the net like which can be accessed and used by people. There are virtual library and also on-line discussion boards which are useful tools for academic exchanges. Thus, the use of internet by students and teachers is perceived as a vehicle to increase knowledge and skills necessary for successful negotiation of tasks presented by 21st century. Hence the Internet is truly a knowledge repository.

Refer to [8] described a knowledge repository as a database of knowledge assets that are systematically organized to facilitate searching and retrieval. Furthermore, the reference [9] stated that the knowledge repository represent a valuable means to manage the explication, sharing, combination, application, and renewal of organizational knowledge. Thus, knowledge repository means a place to store and to retrieve knowledge easily using the Internet facilities.

3. The role of Management Knowledge in Teacher Professional Development

Teachers who had surfing through the internet would get a lot of information their desired, so that its would accumulate as useful knowledge for themselves and others. Obtaining meaningful knowledge is sometimes difficult to be expressed and felt for others verbally, which is called tacit knowledge. However, there is also the acquisition of useful knowledge is easily communicated, received, and others into new knowledge, which is commonly called explicit knowledge.

As stated in [10], tacit knowledge refer to personal knowledge embedded in individual experience and can be extremely difficult to transfer, whereas explicit knowledge is knowledge that is easily articulated and transmitted. Tacit knowledge is more personal knowledge, while explicit knowledge is knowledge that can be shared and developed into new knowledge. Tacit and explicit knowledge are needed in the work-based learning. More clearly in [11] of the Nonaka's premise that tacit knowledge is subjective and experience based

knowledge that cannot be expressed in words, sentences, numbers or formulas, often because it is context specific. This also includes cognitive skills such as beliefs, images, intuition and mental models as well as technical skills such as craft and know-how. Explicit knowledge is objective and rational knowledge that can be expressed in words, sentences, numbers or formulas (context free). Thus, to be explicit and tacit knowledge becomes meaningful for teachers to carry out the work in accordance with their expertise; they are required to have a knowledge management capability.

In [12] defined knowledge management as the process of capturing, developing, sharing, and effectively using organizational knowledge. Similarly this definition described on [13] that knowledge management is a tool, technique, and strategy to retain, analyze, organize, enhance, and share expertise, because knowledge is an infinite asset that will increase the knowledge being presented to the others. In the shortly statement, in [14] defines knowledge management about *"learning to know what we know"*. This means, the knowledge management is the key to find new ways to convert data into useful information so that it becomes knowledge.

To realize an organized and structured knowledge, knowledge management of Nonaka's model is one of strategy that can be used to convert tacit knowledge and explicit knowledge into useful knowledge. Figure 1 shows an illustration of conversion of knowledge based on the Nonaka's model of knowledge. There are four knowledge conversion processes, namely: tacit knowledge - tacit, tacit - explicit, explicit - explicit, and explicit - tacit.

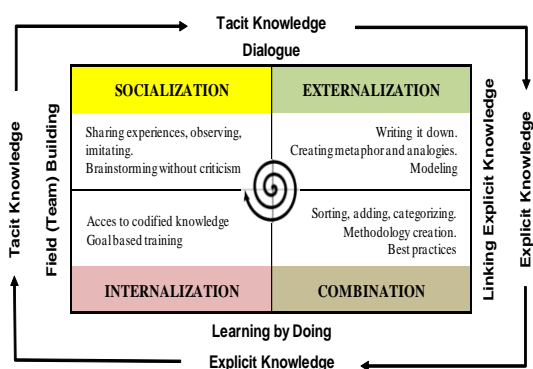


Figure 1. The Nonaka's Model of Knowledge Conversion

Description of the four knowledge conversion process based on Figure 1 can be described in [12], [15] and [16] that *Socialization* (tacit-tacit) is a process of sharing experiences and converting new tacit knowledge through shared experiences such as technical skills, observing, and imitating. *Externalization* (tacit – explicit) is a process of articulating tacit knowledge into explicit knowledge such as through dialogue and reflection, creating metaphor and analogies, and modeling. *Combination* (explicit – explicit) is a process of systemizing concepts into more complex and systematic sets of explicit knowledge such as best practices and methodology creation. *Internalization* (explicit – tacit) is a process of embodying explicit knowledge into tacit knowledge such as access to codified knowledge that closely related to “learning by doing”. Furthermore, in [3] concluded that when experiences through socialization, externalization and combination are internalized into individual's tacit knowledge bases in the form of shared mental models or technical know-how.

Above descriptions can be concluded that the knowledge management ability is necessary needed for vocational education teachers in the learning process because it requires four knowledge conversion processes of the Nonaka's model of knowledge. The internalization process of knowledge is required in the process of learning in vocational education. Process "learning by doing" is an appropriate learning process for vocational education. Vocational education teachers must be able

to realize the internalization process in the learning process. This is in accordance with objectives of vocational education that prepared students to work relevant to their expertise. Of course, teachers are able to carefully manage knowledge will be useful for the improvement of his or her competence and professional development as well as improvement in the quality of teaching and learning activities.

4. Essential of the Internet in Enhancing Professionalism of Teachers' Vocational Secondary School

Knowledge is a subset of information. Information can be easily retrieved, shared, and sent through the internet. Internet technology utilized to support the needs of students' and teachers' requirement who have limited space and time to be able to enjoy education. Many benefits can be gained through the Internet in education, such as: (1) accelerate and simplify to transfer science and technology, (2) more varied and attractive when used in the learning process, (3) encourage students and teachers more actively in seeking information and knowledge, and (4) obtain information that are always new and actual. As mentioned above, the Internet as a knowledge repository, it means knowledge widely spread anywhere, anytime, and to whom knowledge is needed.

In case teacher is able to collect and internalize knowledge in carrying out his or her duties means teacher has strengthened professional ability themselves. Teachers as practitioner in learning activities have responsible to solve any changes in class. As stated in [17] that teacher is faced with rapid changes, high standards and quality improvement demand required teachers to update and to improve their skills through in-service learning that carried out these activities in in-service education and training.

According to [18] professional development is opportunity for teachers to learn what they needed to know and what to do to help students to achieve their desired competencies. This means that professional development is required teachers to improve their pedagogical

knowledge based on specified standards. The results of teacher's professional development are expected to improve their teaching and learning qualities.

Furthermore refer to [19], teachers of vocational education are agent of change in schools. This statement suggests that teachers are required to undertake self-development in order to be able to adapt to changes that occur in performing their duties. Thus, teachers professional development is one part of personnel development cannot be separated from the role of schools. According to [20], the personnel development is an important in part of vocational education that conducted in three ways, i.e. professional development, technical development, and general development. Professional development is to improve teachers' ability that is expected to contribute in improving education quality. Technical development is to effort in increasing teachers' technical ability in learning process relevant to the work world development. General development is to increase in teachers' ability with regard to written and oral communication.

Clearly, above descriptions can be concluded that personnel development for vocational education teachers through professional development is meaningful and leads to new knowledge, skills, and practices that will enable them to better serve their students. In the context of teachers' professional development in Indonesia, including teachers' vocational secondary school, there are three kinds of activities in teachers professional development, i.e. self-development, scientific publications, and innovatively work. Self-development is an activity in participating in a functional education and training and in conducting teachers' board. Publishing activities are to produce scientific papers as the results of their research and to create book's publication. Innovative work activities are realized in some of activities such as finding an applied technology, creating artistry, create / modify learning facilities, etc. All activities require a variety of information to be able to realize each product. Internet is an appropriate means to support teachers'

professional development in improving teachers and school quality.

5. Conclusion

The development of hypertext-based technology through the World Wide Web provided means of displaying text, graphics, pictures, animations, or other information, and easy search and navigation tools that also triggered a worldwide Internet's explosive growth. The internet is a knowledge repository. A variety of information from the Internet can be collected and developed into useful knowledge for students, teachers, and also education. One to be proud of when the teacher is able to perform search, retrieve, and process a variety of information through the Internet and convert them into useful knowledge for the teaching and learning process as well as improving their professionalism.

Optimizing the information from the Internet into useful knowledge for teachers' professional development is required a knowledge management approach. The Nonaka's model of knowledge can be used as a reference in order to make internalization processes of knowledge into the knowledge of technical know-how that is useful for learning activities in vocational education. Finally, the questions of all, how can teachers convert information into useful knowledge from the internet to: their self-development, produce scientific papers, and to work innovatively. All of these activities were personnel development as of teachers' professional development.

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